

Abstract

With an increase in technology and globalization, it is important to ensure agricultural practices conform to the needs of the surrounding landscape to keep the environmental risks low and as pristine as possible. Traditionally, Caribbean islands are known for producing products such as tropical fruits, alcoholic drinks, and sugar cane. However, this is not always the case, such as on the island of Curacao, which lacks the rainfall that many other islands have.

This research project aims to understand the status of agriculture on Curacao, the kinds of techniques the farmers use, what they are growing, and food security. Techniques could range from regenerative agriculture (low till, crop diversity, cover crops) to conventional practices (heavy machinery, chemical sprays, monocrop) and traditional agriculture (manual labor, natural fertilizer, generational knowledge). Local farmers/gardeners will be surveyed to understand their techniques and the crops grown. Basic soil assessments will be undertaken to analyze the soil composition and determine soil health. The results of a soil assessment can help explain current agricultural practices and why certain crops are grown.



Figure 1. Banana Tree at Bed and Bike Resort Westpunt

Methods

This research involved a combination of data retrieval from online. Field work included taking soil samples to test for soil conductivity, taking pictures of agriculture on the island (plantations/farms, Curacao products at grocery store). The soil samples were tested with a Soil EC instrument from Hannah Groline. I then created “case studies” based on different agricultural sectors across the island. Past plantation houses and current day plantations/agricultural influences were mapped on ArcPro GIS.

Case Studies: 1. Aloe Plantation
2. Ostrich Farm
3. Resorts/Tourism
4. Hydroponics/ Vertical Farming
5. Agricultural Future



Figure 2. Cultivated field near Soto



Fig 8. Bazbina Farm Honey



Fig 3. Grindstone

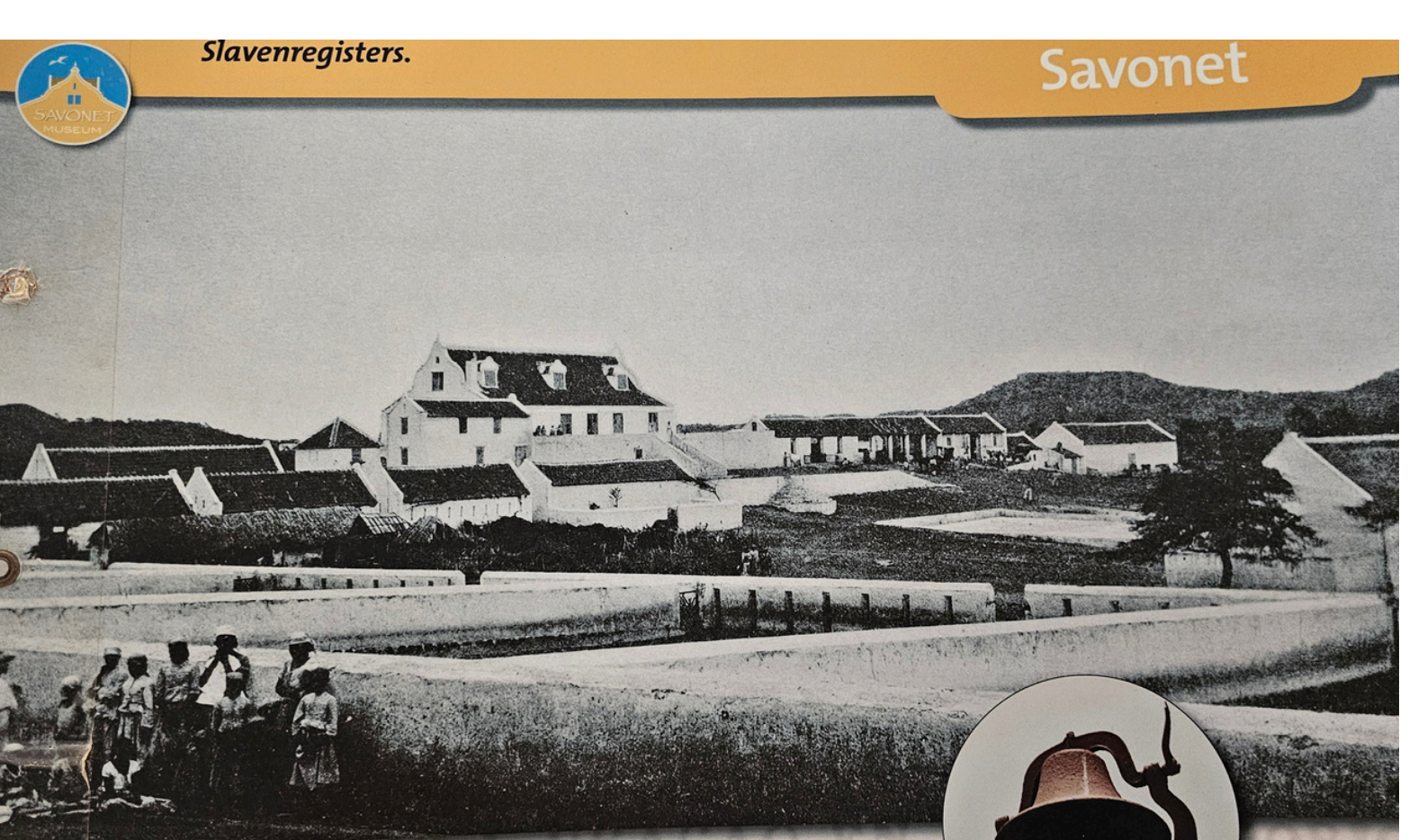


Figure 4. Old photo of Savonet Plantation



Figure 5. 2025 photo of Landhuis Savonet



Fig 6. Garden at Bed and Bike Resort Westpunt



Fig 7. The Aloe Vera Farm



Fig 9. Soil Samples from around the island

Results

Soil Samples: Mangrove, resort, and boka soils were overly salty. Soil from Christoffelberg had lower salinities.

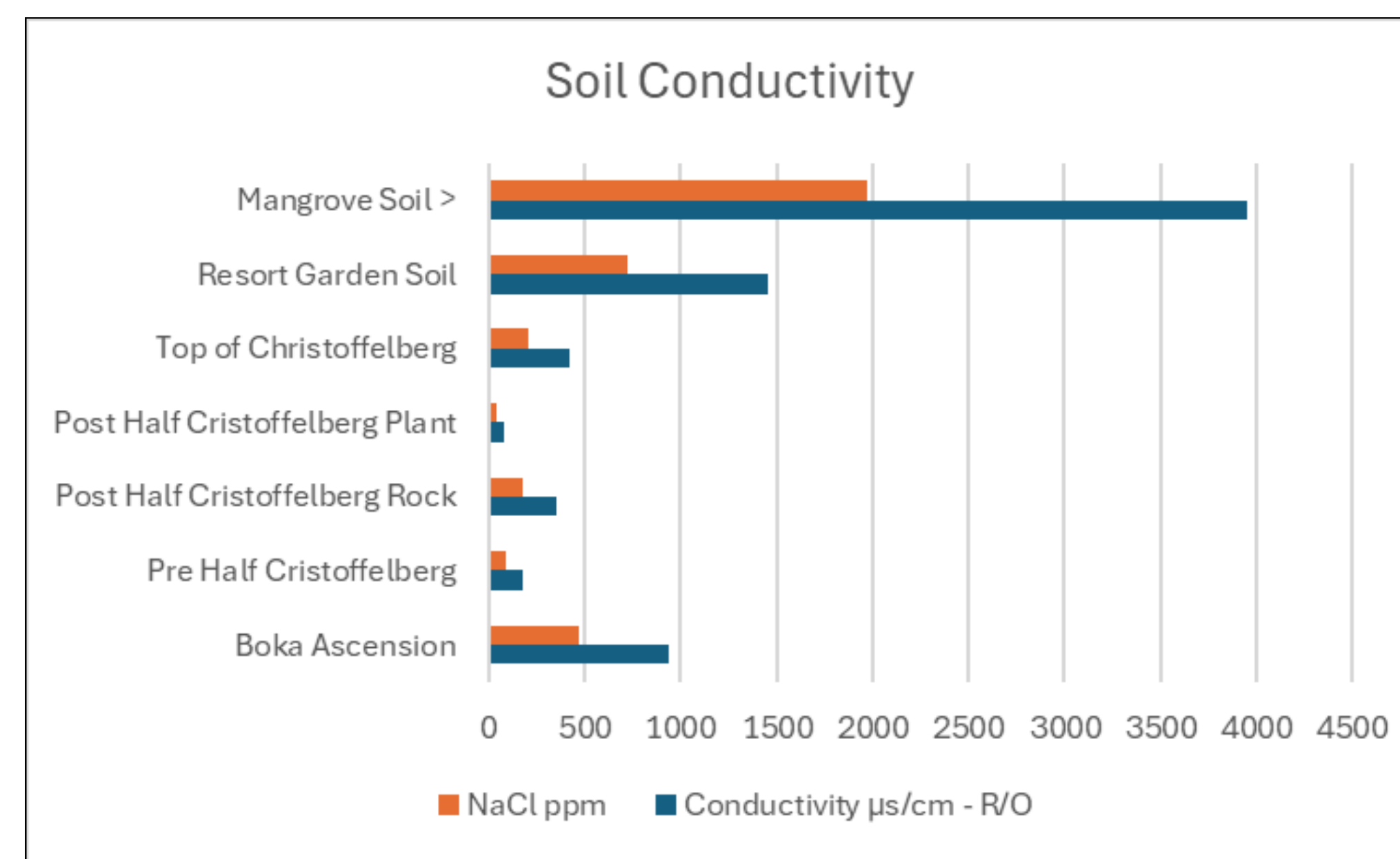
Aloe Vera Case: Everything is done onsite. Aloe is fertilized about once a year with organic fertilizer. Manual labor is used in the harvesting of aloe leaves. Drip irrigation is used to water the aloe. Plant byproducts are composted. Leaves have to be cleaned 2-3 times with clean water.

Ostrich Farm: The farm has over 600 birds. The ostriches on the farm provide the restaurant with eggs and meat.

Resorts/Tourism: Bed and Bike Resort has a garden where they are growing Banana Trees among other things. Tourism industry floods the island with people and uses lots of resource while also providing income for the island.

Hydroponics/Vertical Farming: Dushi Farms Caribbean has plans to build Controlled Environment Agriculture (CEA) warehouses. They will grow lettuce, tomatoes, cucumbers, bell peppers, watermelon, and melon.

Agricultural Future: Curacao government approved memorandum in 2017 to increase locally grown food by 5% per year over next 5 years.



$\pm 50 \mu\text{S/cm}$ (0 to 2000 $\mu\text{S/cm}$) $\pm 300 \mu\text{S/cm}$ (2000 to 4000 $\mu\text{S/cm}$)

Discussion

Aloe Vera Farm: Everything is onsite which reduces carbon emissions. They are contributing to the islands GDP with their aloe products. There is a lot of manual labor involved which helps keep locals employed and can reduce emissions. They are composting plant byproducts. This stops the byproducts from being wasted by creating an organic fertilizer. However, composting can create methane depending on their composting method. Aloe Vera has a lot of health benefits is good for the people of Curacao

Ostrich Farm: Ostriches need a lot of land to run around and graze. Their waste could be used as natural fertilizer but, a buildup of waste could negatively affect soil and groundwater health. The ostrich farm is next to Sint Joris Baii and could impact the water quality

Resorts/Tourism: Resorts like Bed and Bike are making an effort to become more sustainable. Tourism in Curacao uses vital resources for the locals while also providing vital income. Tourism has also caused The Curacaoan diet to become increasingly westernized which could have catastrophic effects on their health.

Hydroponics/Vertical Farming: Dushi Farms Caribbean has big plans to build CEA facilities. They also have goals to provide the island with nutritious food using locally sourced materials and labor. The large facilities will require a lot of energy and fresh water (most of the islands water comes from desalination). The need for water and energy could have a huge impact on the facilities carbon footprint.

Agricultural Future: The Curacao government has set ambitious goals to increase the islands agricultural output. Farms such as Zen Farm BV and Nos Kunuku BV have been created because of such goals. These local farms will play a key role in reducing poverty and raising the standard of living on the island. As Curacao increases their agtech, they could shine a spotlight on new agricultural techniques that could be adopted by the rest of the world to solve rising food crises.

Conclusions

Curacao has a bright future ahead of them. The government should continue to set agriculture goals with the possibility of reducing poverty. However, they need to balance ambition with resource usage as an overuse of water, energy, fertilizer could end up being costly for this small island nation.

Background

For many years, the products produced on Curacao were grown because of the slave trade. The Dutch were the main colonizers of the island. Curacao is still a part of the Dutch kingdom today. Evidence of Curacao's agricultural past can be seen through the landhuis that are still present the island. Historically, Curacao harvested items such as maize, cochineal, aloe vera, wood from the Divi Divi tree, cotton, potatoes, string beans, pumpkin, cucumber, peanut, and many fruit trees including bananas. They also had livestock such as cattle and sheep. Due to the aridness of Curacao, some early plantations were not super successful, and unfortunately slaves were punished for this. Spanish influence is also present on Curacao. Laraha Oranges are descendants of Valencia Oranges brought to Curacao in the 1500s by Spanish explorers. Laraha Oranges are used to make the well-known Blue Curacao drink.

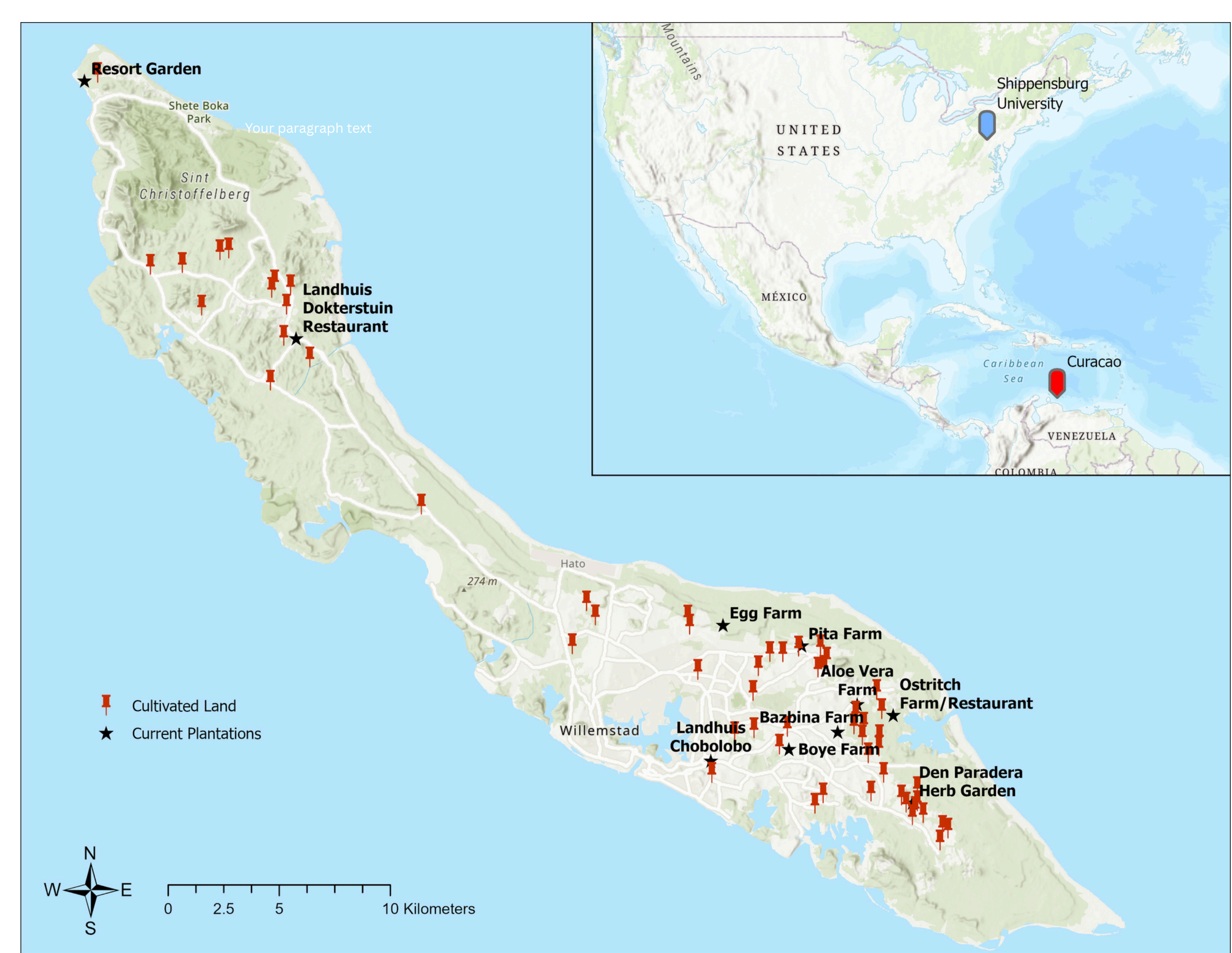


Figure 10. Aloe Vera Farm



Figure 11. Blue Curacao Drinks



Figure 12. Pigs at Porto Marie Beach

References/Acknowledgements

Acknowledgements: Thank you to Dr. Sean Cornell, Holly Smith, and Carmabi Research Institute

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